



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

GEOLOGY AND PALEONTOLOGY.

The International Congress returns to its proper mission.

—The following is part of the last circular of the council of the International Geological Congress. One of the two specific objects which the Congress originally set out to accomplish was the modification of the nomenclature, but the meetings gradually drifted away from the work to the more entertaining occupation of listening to lectures by distinguished savants on various themes. The Council of the coming Congress recalls that body to its duty with abruptness, and reproduces the essential parts of the reports of the Committee employed to study the subject made at the Committee's sessions at Geneva and Manchester in 1886 and 1887.

If half of the questions here enumerated but receive the approval of the coming Congress, a boon will have been conferred on long suffering students.

Third Circular, International Geological Congress, 7th Session, Russia, 1897 :

The Committee of Organization of the 7th International Geological Congress has decided at its session of February 21st (March 5th) to dispose in the following manner of the time which the members of the Congress will pass at St. Petersburg between the 17th (29th) of August and August 23d (September 4th).

From 9 to 10 A. M., will be held the session of the Council of the Congress.

From 10 to 2 P. M., discussion [*in the Congress Ed.*] of the questions which will be proposed in the programme of the Committee of Organization.

From 2 to 3 P. M., visit to the museums and the exposition.

From 3 to 5 P. M., communications of a general character announced in advance to the Committee on Organization.¹

It has been decided to group these communications in such a manner as not to embrace in a single day more than one of the branches of geological science.

After the session of the Congress it is proposed to make excursions in the environs of St. Petersburg. In the interval between August

¹ Up to the present time several Geologists have expressed the desire to make communications of this kind.

17th (29th) and August 23d (September 4th) an excursion of one and a half days will be made to the cascade of Imatra.

As to the scientific questions which it is proposed to elucidate at the 7th Session of the Congress, the Committee on Organization has put itself in communication with Professors Capellini and Dewalque, President and Secretary of the permanent commission of the Congress (a commission charged with elaborating preliminarily the questions which it will be desirable to submit to the discussion of the Congress) as well as with several geologists of Western Europe and America.

In consideration of the answers received, the Committee on Organization has the honor to propose the following programme of the labor of the Congress.

On reviewing the work of the preceding Congresses, the Committee on Organization has observed that all the sessions which have followed that of London have lost sight of the propositions of the commission for the unification of the nomenclature, elaborated in the meetings at Geneva (1886) and at Manchester (1887), and announced by the Secretary of this commission in these terms:

“The commission on the uniformity of nomenclature thought it of importance before going further, to adopt certain principles of a nature to serve as a guide in the discussion of systems of classification, and it adopted the following theses.”

“I. The divisions of the first order should have an universal value, and should be based upon paleontological characters sufficiently general to be applied to the whole earth.”

“II. The sub-groups which are optional will be necessarily defined by the characters which are common to the systems of which they are formed. They should have an almost universal value.” [In the thought of the commission these sub-groups were the Jurassic and the Cretaceous. The meeting at Manchester having rejected these sub-groups, this thesis II disappears from the programme].

“III. Besides the systems shall have a very general value. Their paleontological characters should indicate an organic evolution, particularly characterized by the study of pelagic animals.”

“IV. In order that a division should be erected into a system, it is desirable that the succession of pelagic fauna show itself susceptible of well marked sub-divisions.”

“V. The divisions of a system ought to have an European or equivalent value. Each stage ought to be characterized by a pelagic fauna sufficiently distinct.”

"VI. The sub-stages can have but a regional value. (The commission thinks that the International Congress has not to concern itself with the final divisions which have only a local value)."

"VII. The divisions of the same order ought to present as much equivalence as possible from the point of view of the paleontological evolution which they represent."

"N. B. The commission recognizes that the geographical variations ought to be taken into serious consideration in the establishment of divisions of different orders; but on account of the frequently local character of the variations, and above all of the actual imperfection of our knowledge so far as relates to the old beaches, it thinks that the stratigraphical argument needs to be confirmed by the paleontological criterion."

At the Manchester meeting M. Hughes called attention to the necessity of discussing principles before the applications; on his motion the commission decided to ask the Congress to determine primarily the rules of stratigraphic terminology, such as the rules to follow in the historical and stratigraphical criticism, above all from the point of view of the law of priority.

The commission concludes its report with the following sentence:

"It seems evident that it would considerably shorten the discussions if the Congress proceed in this way."

Unfortunately the Congress of London could not profit by the sensible ideas enunciated at Geneva and Manchester, and was obliged to continue its labors in the direction imposed by the session at Berlin. Similarly the questions put by the commission for unifying the nomenclature were neglected at the Congresses of Washington and Zürich. Consequently it would be desirable that the Congress of Russia return to the questions having an international character, and that the decisions of the commissions of Geneva and Manchester that we have just cited (to which could be added some general theses) should become the basis of the questions to discuss.

The Committee on Organization of the Congress of St. Petersburg is of the opinion that before taking up the other questions, the Congress should decide primarily which of the two classifications it wishes to retain in the science, the *artificial* classification based solely on historical data, or the *natural* classification which bases itself as much on the general physico-geographical changes, common to the whole terrestrial globe, as on the faunal data, and not on the accidental limits of the different divisions called after the name of the region where they have been established for the first time.

The data actually at the disposition of science are sufficiently numerous to sketch the principal features of the great physico-geographical changes, such as the invasion of the oceans, the relations which exist between these and the general oscillations, etc. The reconciliation of these data with the faunal data could doubtless accomplish the admission of a new grouping of geological systems, and put an end to the continual fruitless polemics, which ensue from the efforts one is obliged to make in order to bring into the frame work of the actual systems all the peculiarities which the various regions offer. It goes without saying that the discussion of this question of a general nature does not exclude the necessity of examining the propositions of the commission for the unification of the nomenclature; but a satisfactory preliminary understanding would certainly contribute much to prepare the success of the deliberation on the propositions suggested by the commissions of Geneva and Manchester.

After the examination of the first points it would be very desirable that a second question of principle should be cleared up, that of the rules to follow in the introduction of new terms in stratigraphic nomenclature. Each of us knows how many new denominations appear in the literature to designate different geological divisions. Frequently the authors of the new terms introduce them without any argument, either batrological or faunal, which might serve to distinguish clearly the sediments to which they apply these denominations from the adjacent deposits; it happens even sometimes that the authors themselves have very vague conceptions of what they call by a new name. Such neologisms appear not only in the special literature, but quite frequently in the manuals, whence they pass into the general literature. These new terms being evidently but a useless burden to the science, it is in the highest degree desirable that the Congress, which has already established rules to follow in the paleontological nomenclature, assert itself also on the question of the stratigraphic nomenclature, and that it establish data which may authorize the application of new denominations to certain deposits.

Another question of not less absolute necessity in the opinion of the Committee on Organization, is that of petrographic nomenclature, of which it is more than urgent to-day to establish the principles.

The inundation of new terms in the science has attained such dimensions that very soon no human memory will be able to retain the whole mass of new denominations, and the reading of each memoir will necessitate the employment of a special glossary. The labors undertaken in this direction could be made simultaneously with the deliberations on

the principles of petrographic classification, of which the elaboration has been confided by the Congress of Zürich to a special commission under the presidency of M. A. Michel-Levy.

The Committee on Organization of the Congress of St. Petersburg does not flatter itself that the single session from August 17th (22d) to August 23d (September 5th) will suffice to exhaust this programme, but if it be only a part which can be submitted to discussion from all points of view—a discussion which would offer to the Congress the possibility of expressing itself in a definite sense, the 7th Session of the International Geological Congress would still have the merit of having directed the labors of the meeting in the right road, abandoned since the session at Washington.—P. F.

On the Laramie and Related Formations in Wyoming.

—Various questions that have arisen in regard to the contents of the Laramie formations have been investigated by T. W. Stanton and F. W. Knowlton. They show that the Black Buttes (Wyoming) beds are true Laramie, and correlate with them the Ceratops beds of Converse County. The plant forms confirm the Laramie age of the Ceratops beds. It is also demonstrated that the coal-bearing series of the Laramie plains in large part if not wholly, are older than the true Laramie. The facts stated by the writers lead them to follow the example of King, Hayden and many other geologists in placing the base of the Laramie immediately above the highest marine Cretaceous beds of the Rocky Mountain region. They include in the Montana formation or division intercalated non-marine beds that at some localities yield land plants and brackish and freshwater mollusks as well as coal.

The discussion of the upper limit of the Laramie is replete with interest and is here given in full:—

“Until a few years ago it was the custom to include in the Laramie all of the beds between the Fox Hills and Wasatch formations. In the Denver region the detailed studies of Cross and Eldridge,¹ have resulted in the recognition of the Arapahoe and Denver beds separated from the Laramie and from each other by unconformities and distinguished by marked lithologic features. A revision of the fossil floras of that region has also shown that the Denver beds contain a flora composed of species, a large proportion of which are not found in the

¹ *Proceeds. Colo. Sci. Soc.*, Vol. III, pt. I, pp. 86–133; *Amer. Jour. Sci.*, 3d Ser., Vol. XXXVII, 1889, pp. 261–282; *Monograph*, XXVII, U. S. Geol. Survey (in press).

underlying Laramie. Cross,² Hills³ and others have observed that beds lithologically resembling the Denver bed and in a similar stratigraphic position above the Laramie, occur at several widely separated localities in western and southwestern Colorado. In southern Montana Weed⁴ has defined the Livingston formation as a very thick series of strata lithologically comparable with the Denver beds, resting unconformably on the Laramie and yielding a small flora more closely related to the Denver flora than to any other. The same geologist⁵ also finds beds that he refers to the Fort Union, overlying the Livingstone. All these formations are older than the Wasatch, and we should naturally expect to find them in eastern and southern Wyoming, or, if they are absent there, their places should be indicated by unconformities.

"The Denver and Arapahoe beds have yielded representatives of a remarkable reptilian fauna consisting largely of horned dinosaurs of the family Ceratopsidæ. The presence of this family in the Ceratops beds of Converse County and probably at Black Buttes has suggested the very reasonable query whether the beds containing them at these places also are not younger than the true Laramie. The facts we have presented relative to the stratigraphy and paleontology of the Black Buttes dinosaur horizon seem to us convincing that it is in the Laramie and near the base of that formation. It is less than 200 feet above the marine Cretaceous, and there is no evidence of a break⁶ nor any abrupt lithological change. The character of the flora and of the invertebrate fauna also, so far as the species have a distribution in recognized horizons elsewhere, favors its reference to the Laramie. If the Dinosaur bed of Black Buttes is not Laramie, then the Laramie is either absent or is represented only by about 100 feet of sandstone. The overlying beds up to and including strata with a Fort Union flora seem to form a continuous series that is indivisible either structurally or lithologically, and we can see no reason for placing the top of the Laramie lower than the base of the lowest bed with a Fort Union flora.

"Closely similar conditions are seen in Converse County, the principal difference being a greater development of the beds. The sandstones at the base overlying the Fox Hills are a few hundred feet

² Amer. Jour. Sci., Vol. XLIV, 1892, pp. 19-42.

³ Proceeds. Colo. Sci. Soc., Vol. III, pt. III, 1890, pp. 390-397.

⁴ Bull. U. S. Geol. Surv., No. 105, pp. 21-37.

⁵ Amer. Geol., Vol. XVIII, pp. 201-211, 1896.

⁶ The supposed unconformity between Powell's Point of Rocks and Bitter Creek groups has no bearing on this question, since it is below marine beds belonging to the Fox Hills.

thick, and the variable, more argillaceous higher beds, with a fresh-water fauna in large part identical with that at Black Buttes and a flora that also indicates the same horizon, have a much greater thickness. Here again there seems to be no break in a series that has Fort Union plants in its upper member. The abundant occurrence of such a species as *Campeloma multilineata* throughout all but the lowest portion of the series argues strongly for continuous sedimentation.

"The difficulty of recognizing unconformities in beds so little disturbed has not been overlooked, and the possibility that there may be such undiscovered breaks in these two areas is freely admitted, though it does not seem to us probable. From the facts now available it seems most probable that in Converse County, and in the Bitter Creek Valley, the time representatives of the Denver and Arapahoe beds are undifferentiated portions of a continuous series, and cannot be separated from the Laramie. The Fort Union beds are apparently distinguishable by means of their flora, and these mark the upper limit of the Laramie in the areas in question." (Bull. Geol. Soc. Amer., Vol. 8, 1897).

A Comparison of European and American Lower Cretaceous Flora.—In comparing the fossil floras of the Lower Cretaceous beds of America with those of Europe, Dr. Lester Ward finds some close analogies existing between them. The European beds examined are the Wealden of England, the Scaly Clays of Italy, and the Lower Cretaceous of Portugal; the American floras used for comparison are those of the Older and Middle Potomac, the Trinity of Texas, and the Kootanie of the northwest. The table of the distribution of the Wealden flora compiled by Dr. Ward shows that the paleontological relations between the Wealden of England and the Potomac formation of America are as close as are the geological relations.

In regard to the Scaly Clays of Italy, the author is inclined to favor their Lower Cretaceous age from the general resemblance of the Cycad remains of the formation in question to those of America. Both the stratigraphy and the faunal remains confirm this view.

Lastly, the author finds that the Lower Cretaceous of Portugal is, botanically speaking, a close repetition of that of America. (Extr. Sixteenth Ann. Rept. U. S. Geol. Surv., 1894-95. Washington, 1896).

Geological News.—**ARCHEAN.**—The iron ore bodies in and near Mineville, N. Y., constitute the third largest single group developed east of Lake Superior. They occur on the contact between gabbro and gneiss. A study of the relations of the rocks leads Mr. J. F.

Kemp to the conclusion that the gabbro was intruded as one or more sheets which pierced the gneisses parallel with the present direction of foliation. Subsequent to the intrusion and to the ore deposition came the dynamic metamorphism which developed the gneissoid foliation. The ore deposition, the metamorphism and the folding are of pre-Cambrian date, but some faulting is probably later. The author regards the ores as contact deposits formed by the influence and stimulus of the gabbro intrusion. (Trans. Amer. Inst. Min. Eng., 1897).

PALEOZOIC.—The affinities of the perplexing genus *Vertebraria* have been finally settled by M. R. Zeiller. Among the collection of plants obtained by M. de Launay from the permo-triassic deposits of the Transvaal, were a number of specimens of *Vertebraria*, which upon minute examination showed not only the rhizome structure, but also that the rhizome consisted of a central axis with a variable number of longitudinal wings anastomosing two by two from place to place. This suggested to the investigator that *Vertebraria* belonged to the *Glossopteris*. Other specimens verified this conjecture by permitting the tracing of a group of bundles starting from the anastomosis of longitudinal ridges into the midrib of a *Glossopteris* leaf. *Vertebraria* is, therefore, the rhizome of *Glossopteris*. (Records Geol. Surv. India, Vol. XXX, 1897).

MESOZOIC.—A small collection of plants from the Cretaceous marl at Cliffwood, N. J., is reported upon by Professor Hollick. The remains number 26 species, of which 10 are new; the latter are described and figured. Conifers are the most abundantly represented. This collection is of interest as supplementing our previous knowledge of the Cretaceous flora of eastern North America. (Trans. New York Acad. Sci., 1887).

CENOZOIC.—Dr. George Dawson reports the finding of *Globigerina cretacea* and *Textularia globulosa*, as well as other forms of marine organisms in the boulder clays of the Great Plains which appear to be contemporaneous with the deposition of the clays. This fact corroborates the author's previous suggestion that the water covering the western plains at this time may have been at the level of that of the sea and in more or less direct communication with it. (Journ. Geol., Vol. V, 1897).

The evidence thus far gathered concerning the petroleum yielding rocks of California leads to the following conclusions:—

(1) That the Oligocene and Eocene formations contain a primary deposit of petroleum.

(2) Secondary deposits consisting of asphaltum, have a vertical range from Miocene to Pleistocene. (Calif. State Min. Bur. Bull. 11, [1896] 1897).

BOTANY.¹

A Scientific Dictionary of Plants.—Of unscientific dictionaries of plants we have had many, but at last we have one which may be consulted without fear by the scientific botanist. It is so useful that we may well call attention to it here. Its author, J. C. Willis, is the Director of the Royal Botanic Garden in Ceylon, and the book, which he calls "A Manual and Dictionary of the Flowering Plants and Ferns," is the outgrowth of his experience in garden, museum and field. In the first volume are given summaries of Morphology, Ecology, the Principles of Classification, Geographical Distribution, and Economic Botany. The second volume, which is double the size of the first, consists of an alphabetical arrangement of classes, orders and genera, each with valuable descriptive and numerical data.

In the preparation of the work the author has made use of Engler and Prantl's *Pflanzenfamilien*, thus insuring a modern treatment. The fact that it is brought out by the Cambridge University Press as one of the Cambridge Natural Science Manuals, is a sufficient guarantee of the mechanical excellence of the work.

—CHARLES E. BESSEY.

Order and Family in Botany.—It has been a well-recognized law in Zoology that "Family" is a subdivision of "Order," and in many botanical publications an effort has been made to recognize the same relation. It is very unfortunate that in the ordinary English books both of these terms have been applied to the same groups. Thus we have Order *Ranunculaceæ* and Family *Ranunculaceæ*, Order *Compositæ* and Family *Compositæ*. Here we throw away a much needed group-term, and are obliged to bring in the term "Cohort" to replace it, to say nothing of "Series" and "Division." Some of the German botanists have wisely followed the zoological practice of using "Order" for a group above "Family." Thus Luerssen (*Handbuch der Systematischen Botanik*), Sachs (*Text-book of Botany*), Goebel (*Outlines of Classification and Special Morphology of Plants*), Schumann (*Lehrbuch*

¹ Edited by Prof. C. E. Bessey, University of Nebraska, Lincoln, Nebraska.